Abstract Submitted to the
International Conference on Strongly Correlated Electron Systems
University of Michigan, Ann Arbor
August 6-10, 2001

Elastic Moduli in Unconventional Superconductor Sr_2RuO_4

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Ultrasonic measurements have been performed on single crystals of Sr_2RuO_4 across the superconducting transition temperature T_c (≈ 1.37 K). We observed a jump-like decrease in both longitudinal elastic moduli C_{11} and C_{33} at T_c and estimated strain dependence of T_c from the jump taking account of the Ehrenfest relation. It is remarkable that the in-plane strain dependence ($|dT_c/d\varepsilon_{xx}| = 174$ K) is much greater than that along the crystal c-axis ($|dT_c/d\varepsilon_{zz}| = 38$ K), contrary to the strain response in isostructural cuprate superconductor $La_{2-x}Sr_xCuO_4$.